



## Pangolagrass for Forage

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**P**angolagrass (*Digitaria eriantha* Steud., synonyms *D. decumbens* Stent, *D. pentzii* Stent) is a native of tropical South Africa. Vegetative material was introduced to Hawaii and Florida in 1935 and distributed to many subtropical and tropical areas. It widely used in central and southern Florida and the Caribbean region.

### Description

Pangolagrass is a stoloniferous perennial. The stolons spread over the surface of the ground and develop roots at the nodes. The stolons and stems are hairy but the leaf blades are straight and smooth. The flowering head normally extends above the leaves, topped with six or seven radiating flower spikes. Very few viable seeds are produced.

### Environment

Pangolagrass is a very important pasture forage in Hawaii, adaptable over a growing range from sea level to 3000 feet elevation. It requires a minimum of 40 inches of annual rainfall. Production of forage is highest during late spring to early fall, and plant growth is severely reduced during the cool winter season, especially at higher elevations.

### 'Mealani' pangola

Dr. Ukio Urata, a researcher with the former Hawaii Agricultural Experiment Station of the University of Hawaii, developed this cultivar in the 1970s. 'Mealani' is more productive than common pangolagrass during the cool season at elevations above 2500 feet. Limited amounts of vegetative propagation material is maintained at CTAHR's Mealani Research Station in Kamuela on the island of Hawaii.

### Establishment

Both common and 'Mealani' pangolagrass are propagated only by vegetative means, by sprigging of mature stems and stolons. These can be hand planted or scattered and disked into the soil. The field should be well prepared, and growing conditions at the time of sprigging should be favorable.

### Management

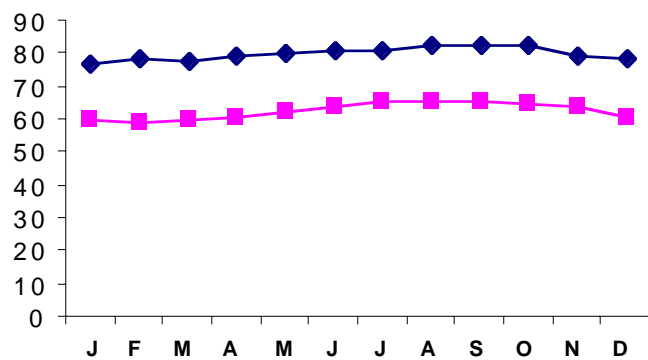
Pangolagrass pastures are very productive during the warm growing season and can withstand high stocking density, trampling, and 30-day rotations. Rotational cycles of pastures mixed with legumes should be increased to 45–50 days to allow recovery of the legumes. During the cool season, especially at higher elevations, the productivity of pangolagrass is very low, and a rotation cycle of 60 days or more is recommended.

### Fieldwork in Hawaii

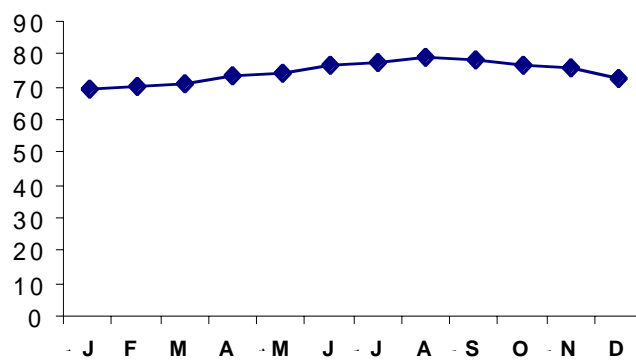
Field plots (10 x 100 ft) were established at three CTAHR research stations (Mealani, Waiakea, and Waimanalo). The plots were harvested at regrowth intervals of 4, 8, and 12 weeks at each of the three locations. A "maintenance" level of fertilizer was applied, consisting of 2.25 lb of urea and 2.1 lb of muriate of potash per plot every 3 months (equivalent to 390 lb of urea and 365 lb of muriate of potash per acre per year). Testing the soil before any fertilizer application is strongly recommended.

Yield data for the three sites are shown in Table 1. The harvested forages were sent to CTAHR's Agriculture Diagnostic Service Center for tissue analyses, and those data are shown in Table 2.

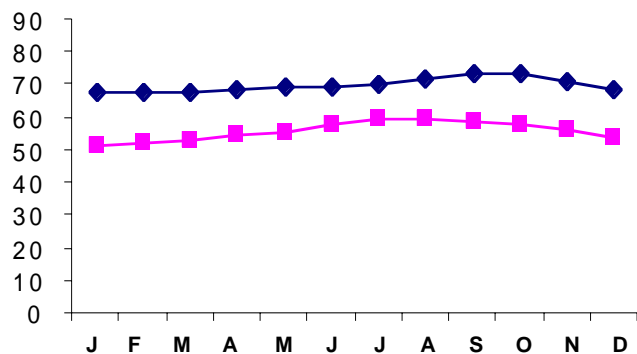
**Average maximum and minimum temperatures (°F) at Waikeke Research Station, 1988–1994.**



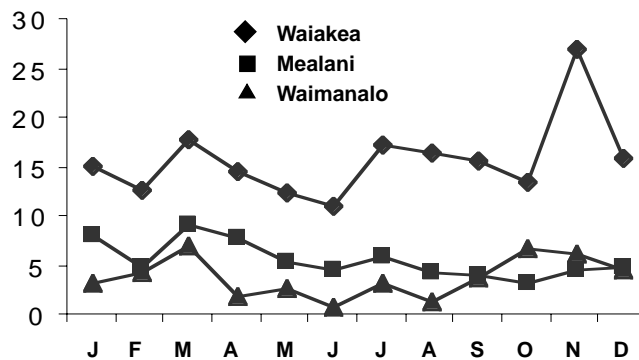
**Average temperature (°F) at Waimanalo Research Station, 1991–1994.**



Average maximum and minimum temperatures (°F) at Mealani Research Station, 1988–1994.



Average monthly rainfall at three CTAHR research stations, 1991–1994.



### Resistance to the yellow sugarcane aphid

More than 250 grasses were screened and scored on a 10-point scale, (0 = no damage, 9 = plant death) to evaluate tolerance to the yellow sugarcane aphid, *Sipha flava* Forbes. A resistance score was established for each grass tested. Two pangolagrasses were tested and found susceptible to aphid feeding damage; the scores were common pangolagrass  $5.73 \pm 0.57$ , and 'Mealani'  $5.78 \pm 0.46$  (mean  $\pm$  standard error).

### Acknowledgements

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research on the yellow sugarcane aphid forage resistance screening. Special thanks to Dr. Stanley Ishizaki, retired forage analyst in the former CTAHR Department of Animal Sciences, for initially establishing the forage plots.

### References

- Alderson, James, and W. Curtis Sharp. 1995. Grass varieties in the United States. United States Department of Agriculture. CRC Press, Inc., Boca Raton, FL.
- Whitney, L.D., E.Y. Hosaka, J.C. Ripperton. 1939. Grasses of the Hawaiian ranges. Hawaii Agricultural Experiment Station, University of Hawaii, Bulletin no. 82.

**Table 1. Yield of pangolagrass cv. Mealani (lb/acre) in three locations at three regrowth periods (mean of 39 samples  $\pm$  standard error).**

Location	4-week	8-week	12-week
Mealani	835.5 <sup>a</sup> $\pm$ 119.2	1859.2 <sup>a</sup> $\pm$ 259.3	3129.6 <sup>a</sup> $\pm$ 323.6
Waiakea	1016.1 <sup>a</sup> $\pm$ 94.4	2904.4 <sup>b</sup> $\pm$ 190.5	4153.7 <sup>b</sup> $\pm$ 344.4
Waimanalo	1743.4 <sup>b</sup> $\pm$ 181.7	3295.5 <sup>b</sup> $\pm$ 304.2	4990.7 <sup>c</sup> $\pm$ 385.1

Means within columns with different superscripts are significantly different ( $P < 0.05$ ).

**Table 2. Nutrient composition (%) of pangolagrass cv. Mealani at different stages of growth.**

Stage	Dry matter	Crude protein	NDF	ADF	P	K	Ca
<b>Mean <math>\pm</math> standard error</b>							
4	15.6 $\pm$ 0.9	14.0 $\pm$ 0.7	61.3 $\pm$ 1.1	32.3 $\pm$ 0.6	0.20 $\pm$ 0.01	2.38 $\pm$ 0.40	0.52 $\pm$ 0.01
8	20.7 $\pm$ 0.9	5.3 $\pm$ 0.1	68.4 $\pm$ 0.1	35.9 $\pm$ 0.9	0.14 $\pm$ 0.00	1.38 $\pm$ 0.03	0.44 $\pm$ 0.00
12	20.8 $\pm$ 2.3	5.5 $\pm$ 0.7	71.8 $\pm$ 0.8	37.6 $\pm$ 0.6	0.13 $\pm$ 0.01	1.60 $\pm$ 0.40	0.50 $\pm$ 0.06
<b>Minimum-maximum values</b>							
4	12.4–21.2	9.1–21.2	39.2–71.6	25.6–36.5	0.15–0.3	1.27–4.2	0.49–0.6
8	14.7–23.8	4.6–17.5	57.8–77.3	23.6–45.4	0.10–0.2	0.44–3.1	0.22–0.6
12	14.8–31.1	2.4–11.9	64.4–79.8	31.6–44.0	0.09–0.2	0.79–3.4	0.35–0.8

NDF = neutral detergent fiber; ADF = acid detergent fiber; P = phosphorus; K = potassium; Ca = calcium